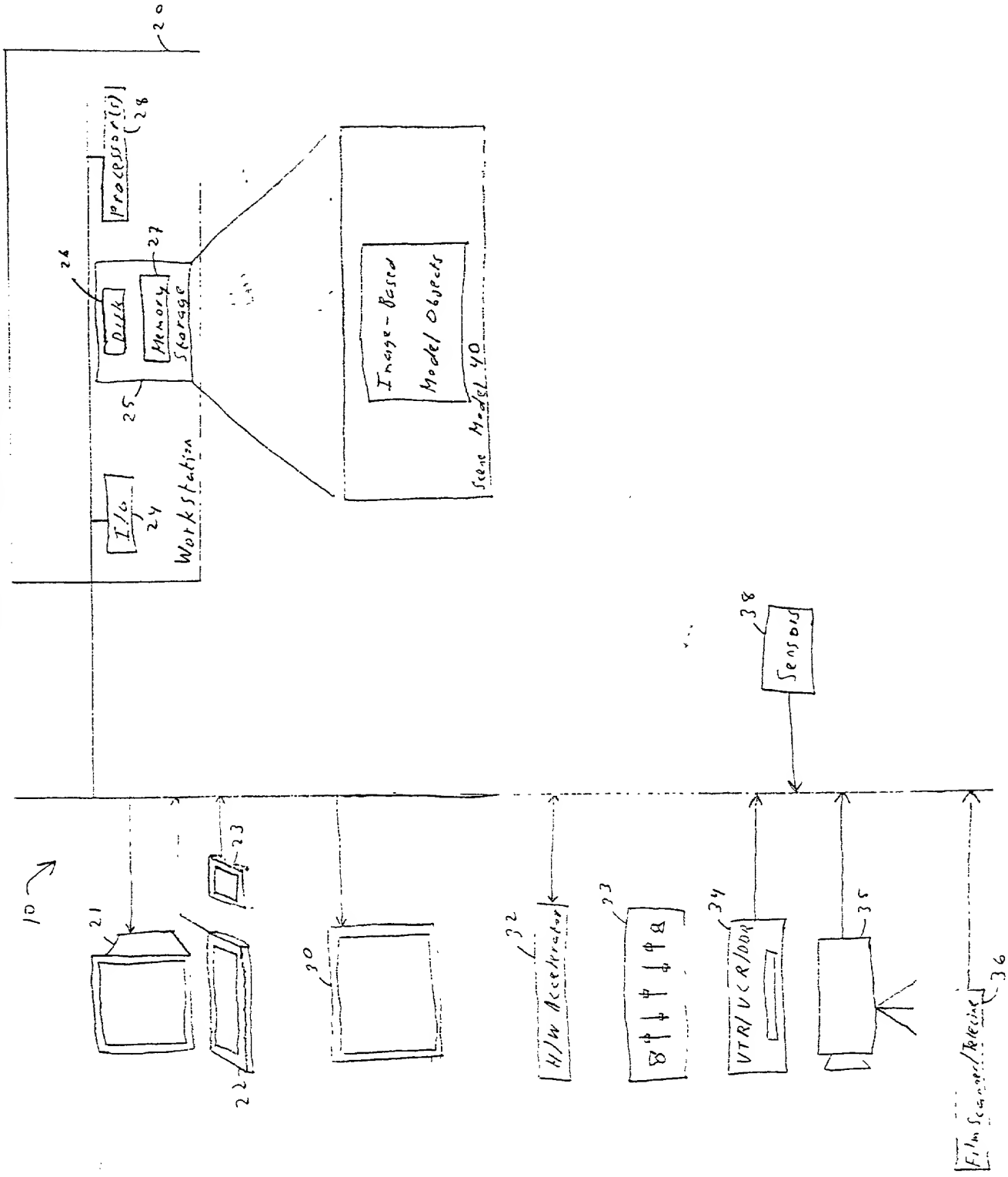
20
Processor(s)
28
26
27
Disk
Memory Storage
25
I/o
24
Workstation
Image-Based Model Objects
Scene Model 40
38
Sensors
10
21
23
22
20
32
H/W Accelerator
33
34
VTR/VCR/DVD
35
36

Fig. 1

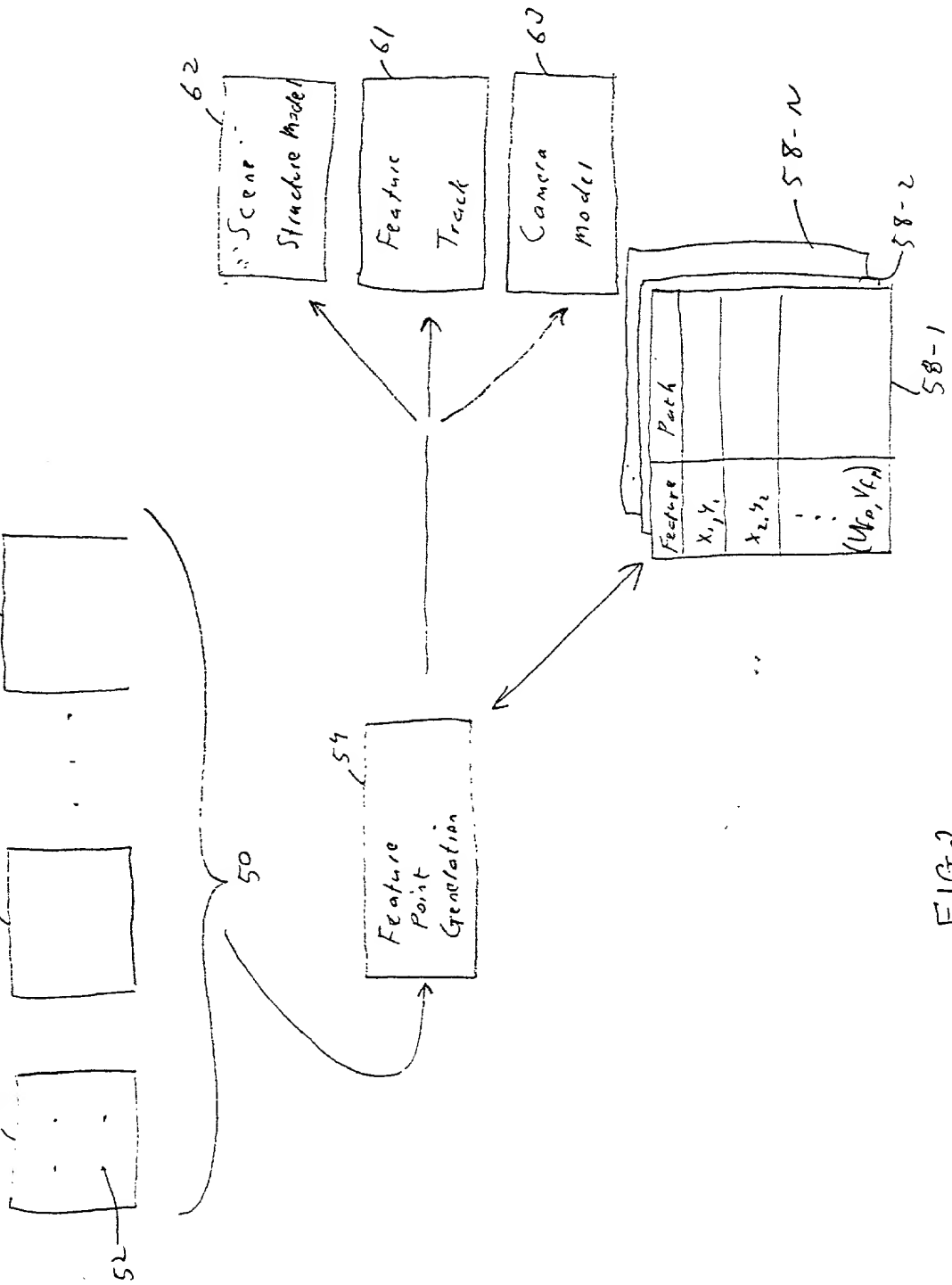
62
Scene Structure Model
61
Feature Track
60
Camera Model
58-N
58-2
58-1
Path
Feature
x_1, y_1
x_2, y_2
(u_p, v_p)
54
Feature Point Generation
50
51-N
51-2
51-1
52

FIG 2

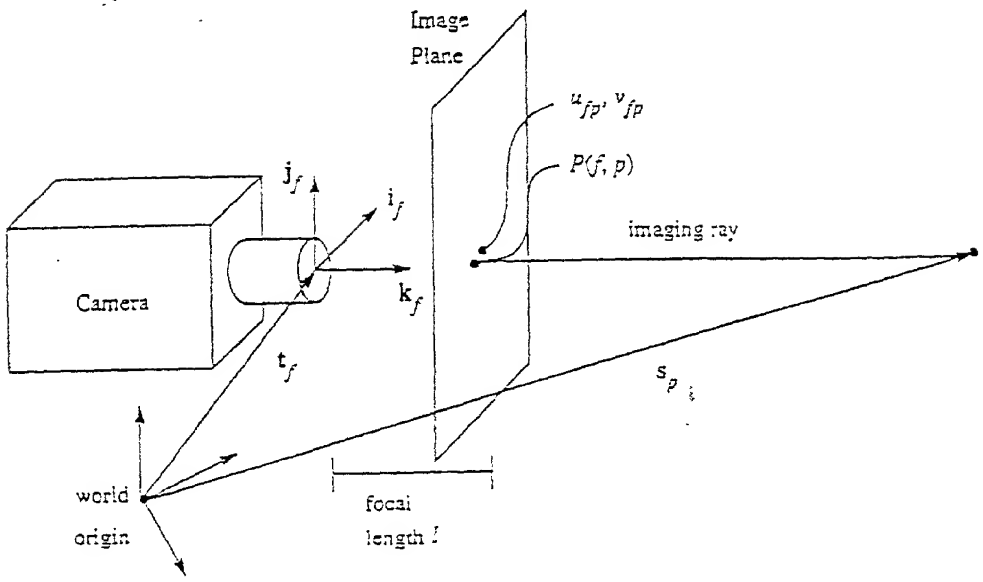
Image
Plane
u_{fp}, v_{fp}
$P(f, p)$
imaging ray
j_f
i_f
k_f
Camera
t_f
s_p
world
origin
focal
length

Fig. 3

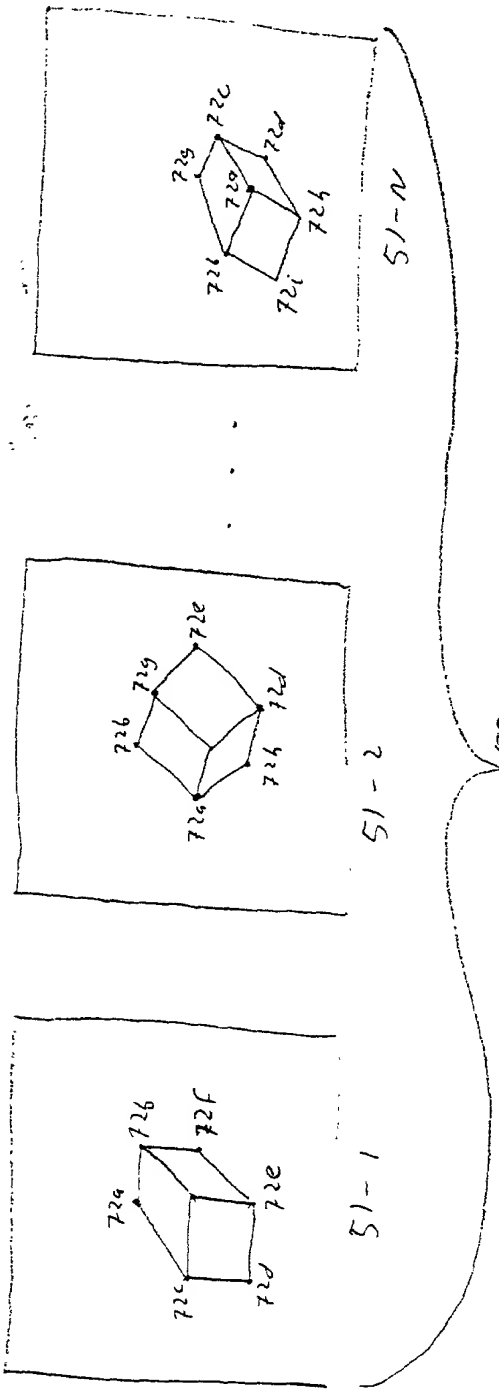

Fig. 4a

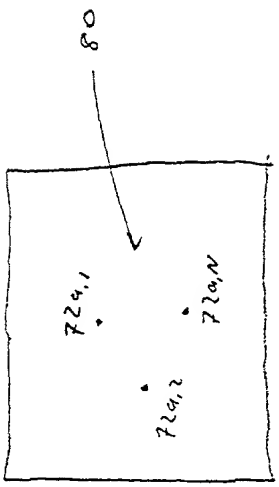

Fig. 4b

09647664 - 050201

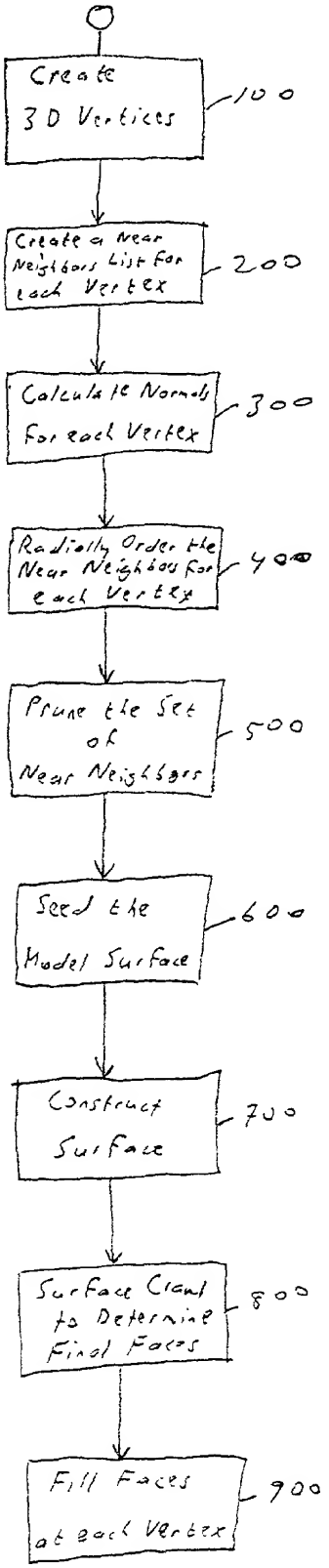

Fig. 5

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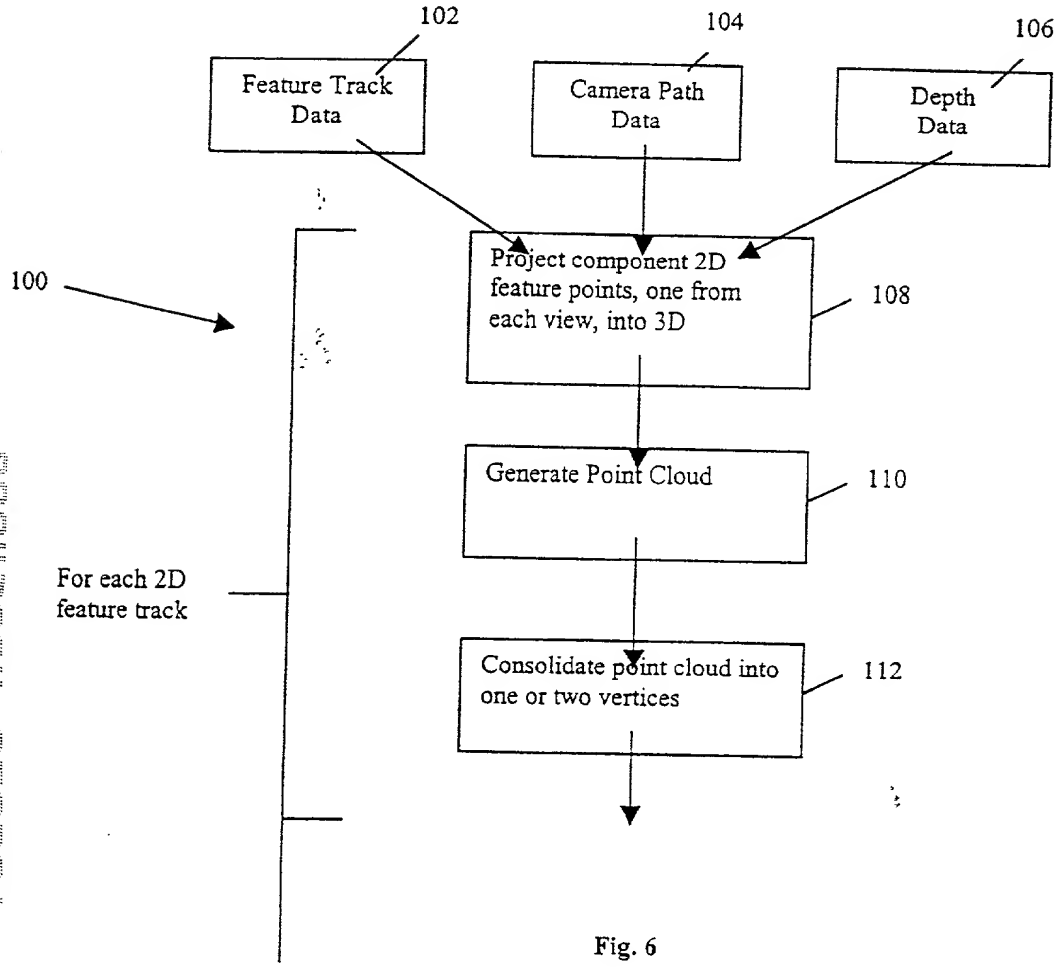

Fig. 6

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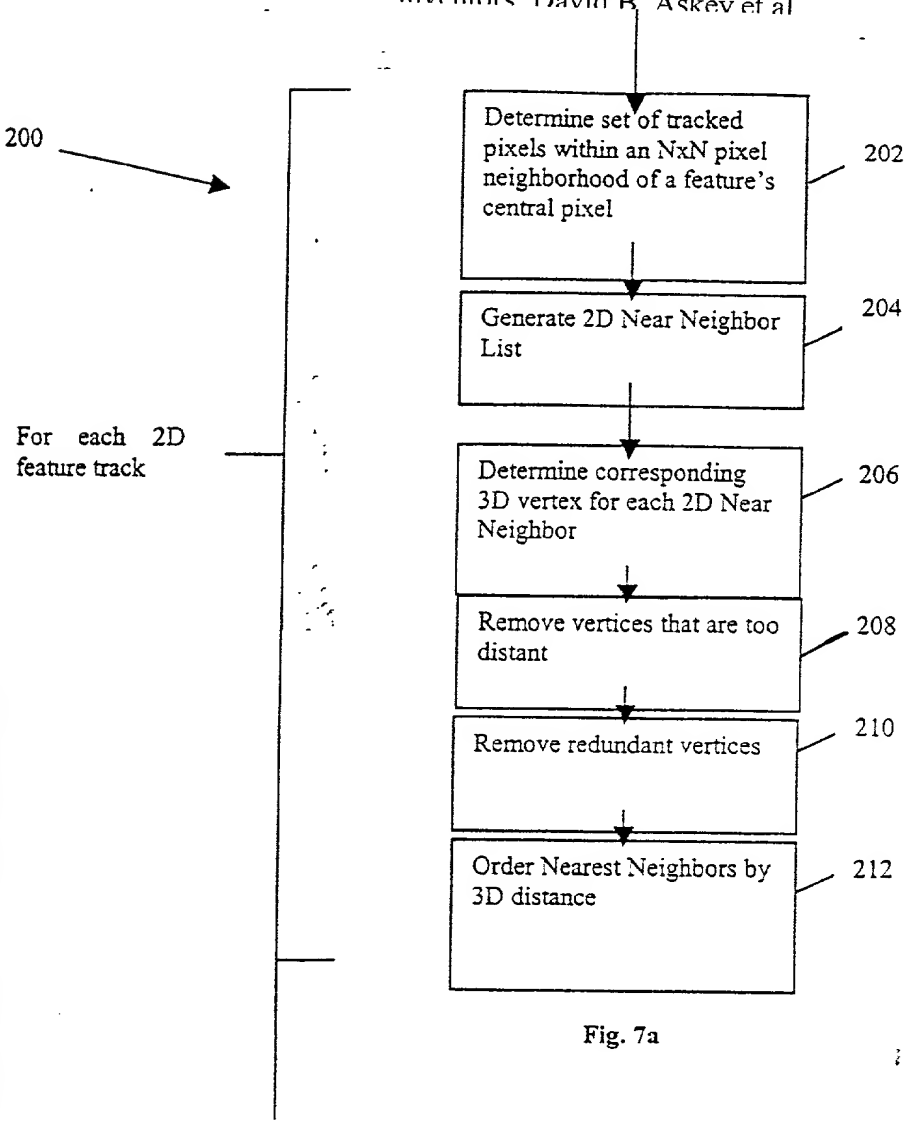
200
For each 2D feature track
Determine set of tracked pixels within an NxN pixel neighborhood of a feature's central pixel
202
Generate 2D Near Neighbor List
204
Determine corresponding 3D vertex for each 2D Near Neighbor
206
Remove vertices that are too distant
208
Remove redundant vertices
210
Order Nearest Neighbors by 3D distance
212

Fig. 7a

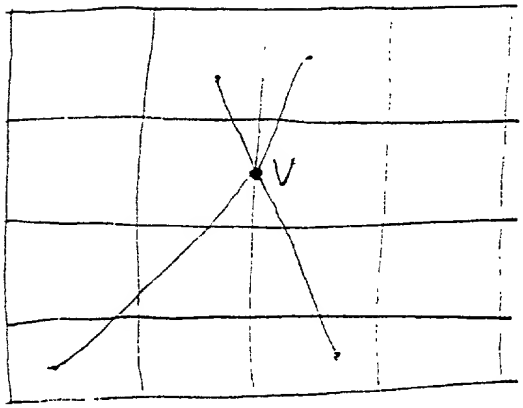
V

Fig 7b

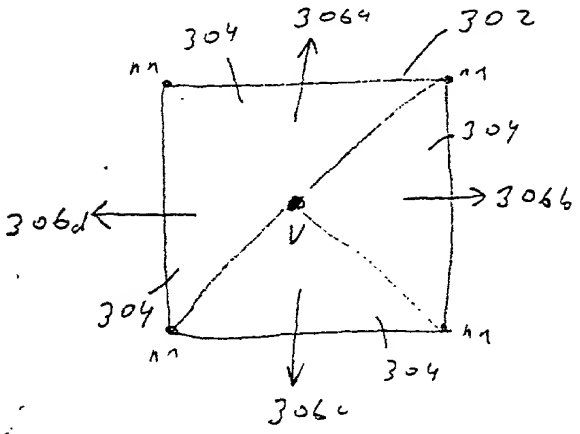

Fig. 8

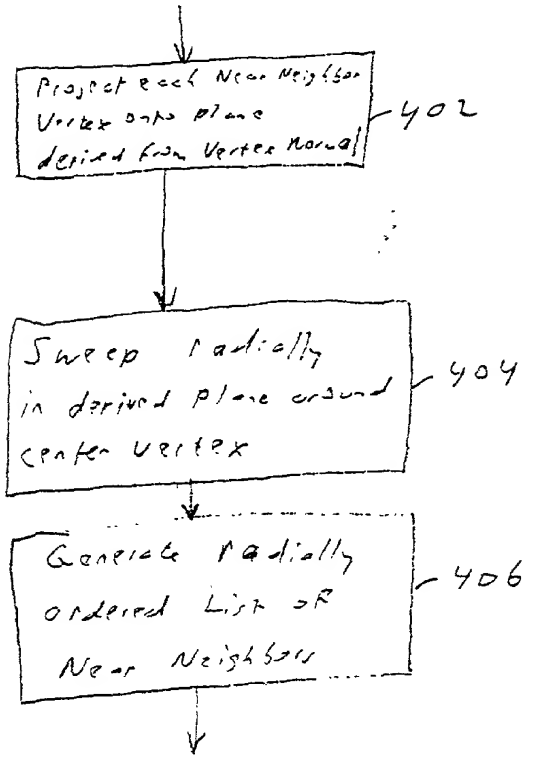

Fig. 9

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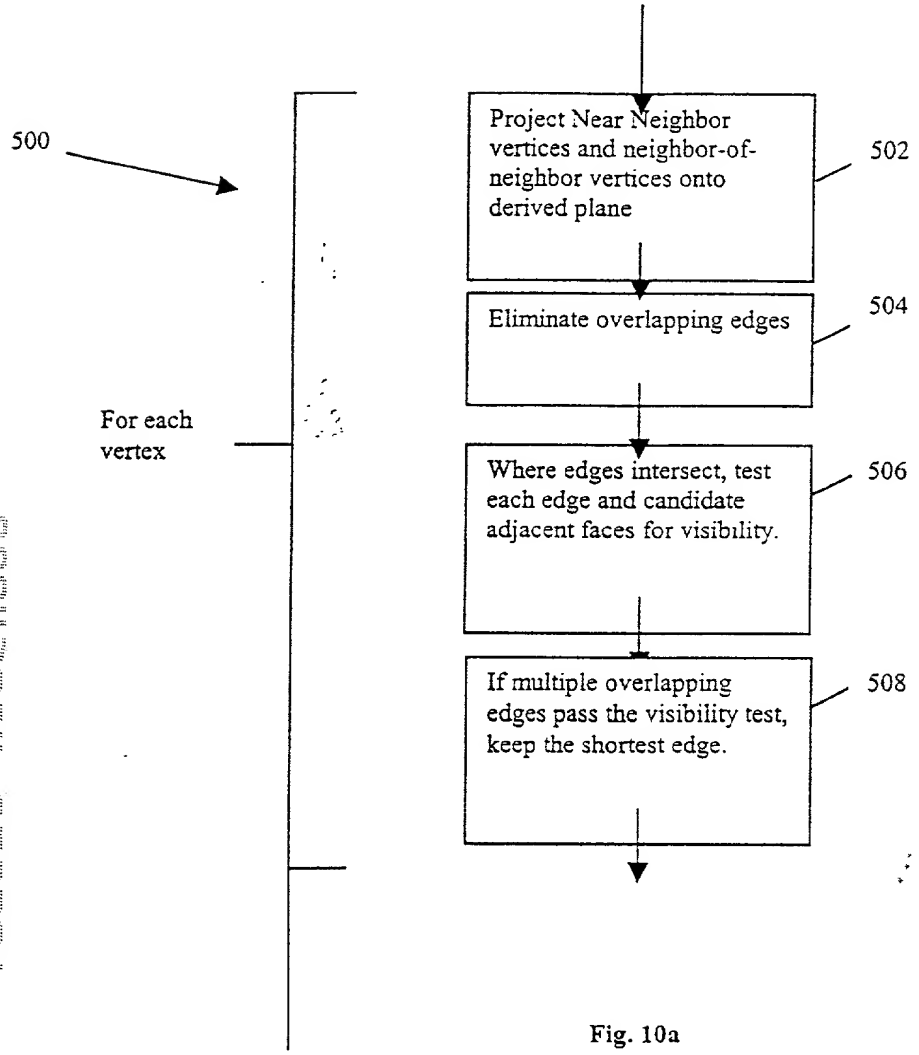
500
For each vertex
Project Near Neighbor vertices and neighbor-of-neighbor vertices onto derived plane
502
Eliminate overlapping edges
504
Where edges intersect, test each edge and candidate adjacent faces for visibility.
506
If multiple overlapping edges pass the visibility test, keep the shortest edge.
508

Fig. 10a

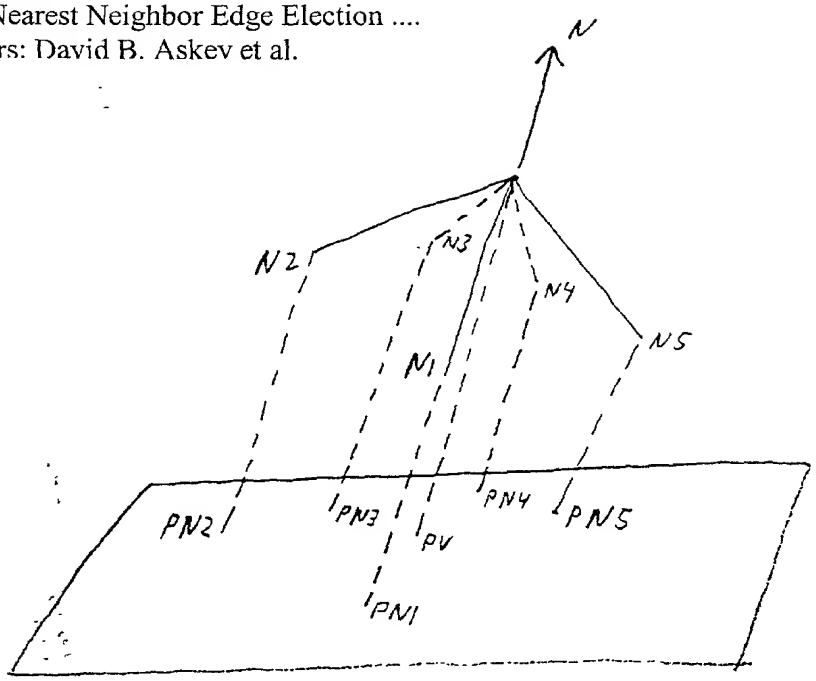

Fig. 10b

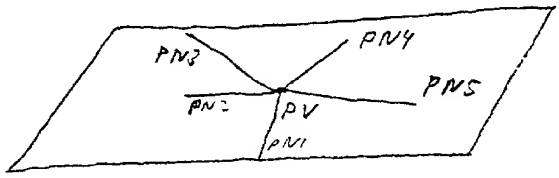

Fig. 10c

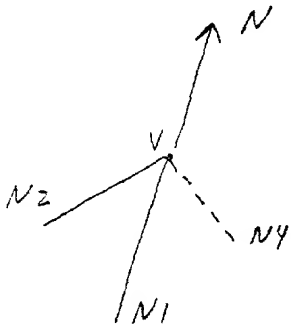

Fig 10d

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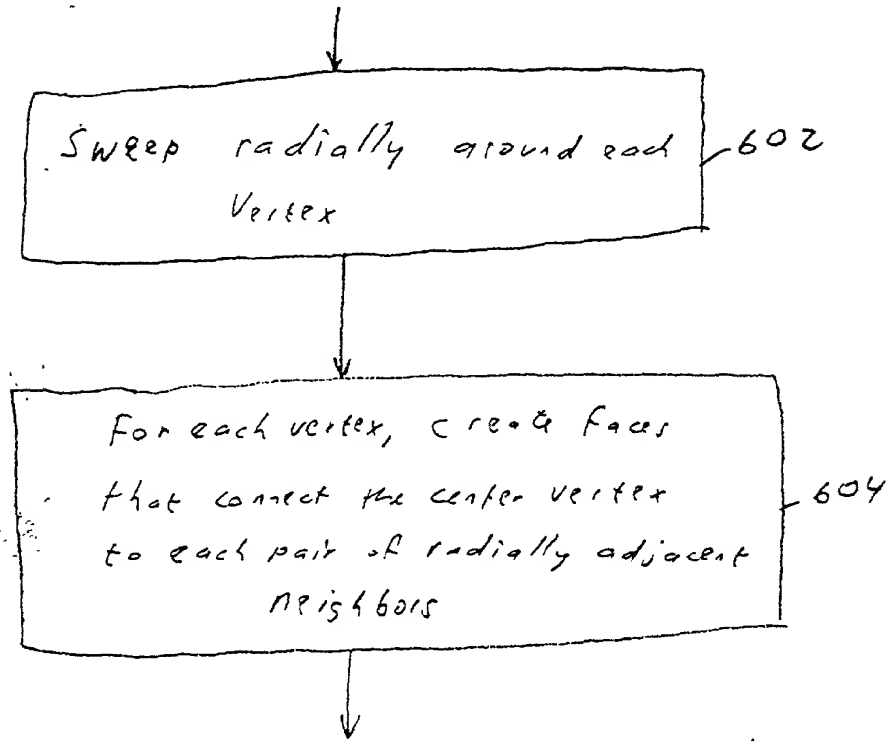

Fig. 11

Doc#: 2346.2004-001

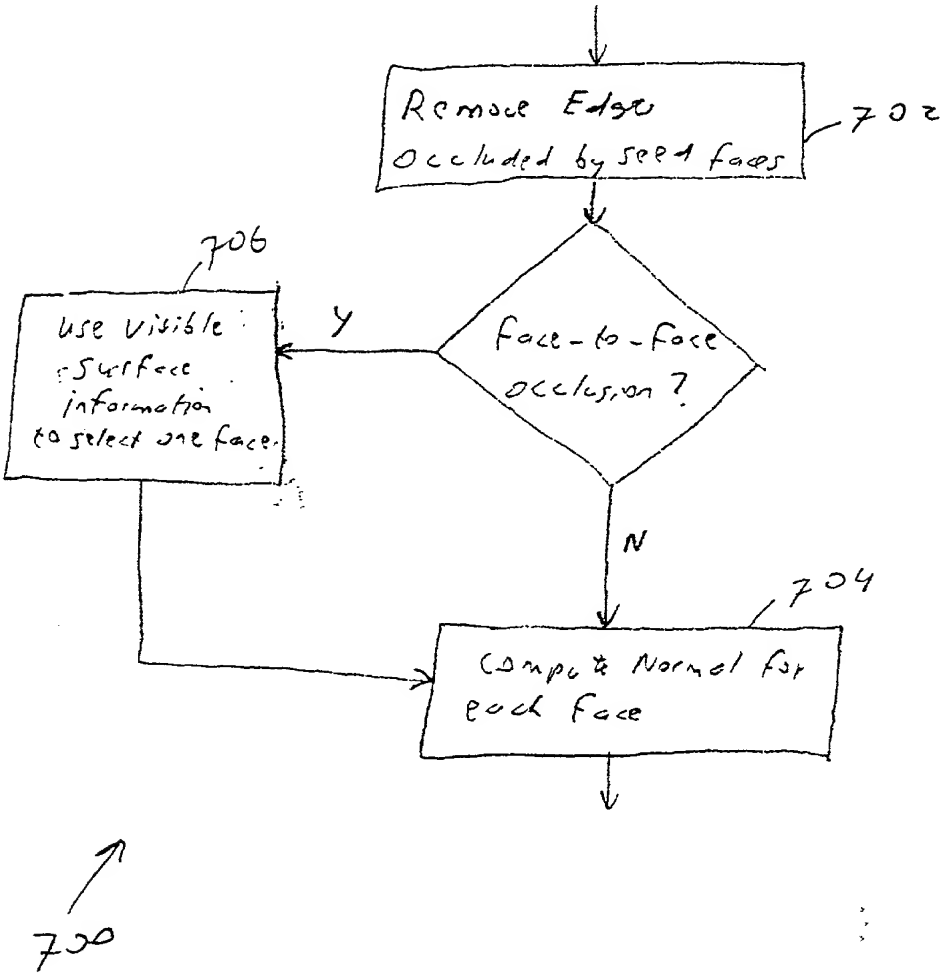
Remove Edge Occluded by seed faces
702
Face-to-face occlusion?
Y
N
706
use visible surface information to select one face.
704
Compute Normal for each face
700

Fig. 12

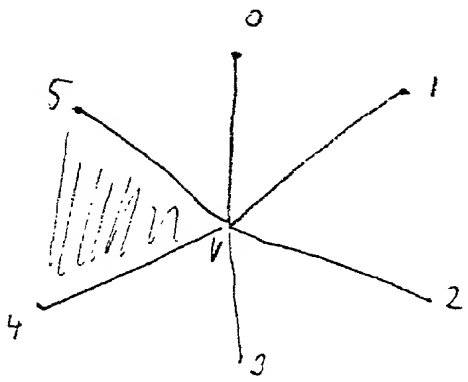

Fig. 13

Substitute Sheet

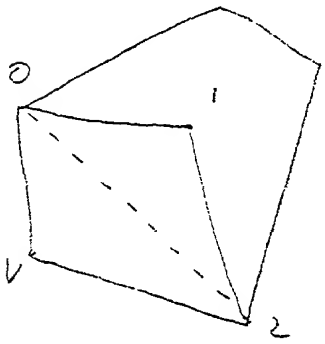

Fig. 14